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UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES

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*Ex parte* FRANCISCUS LEONARDUS GERARDUS VRIES,  
and ANTONIE HUBERT MARIE KEES (DECEASED)

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Appeal 2008-1608  
Application 10/500,502  
Technology Center 1700

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Decided: July 23, 2008

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Before ADRIENE LEPIANE HANLON, PETER F. KRATZ, and  
MARK NAGUMO, *Administrative Patent Judges*.

HANLON, *Administrative Patent Judge*.

DECISION ON APPEAL

A. STATEMENT OF THE CASE

This is an appeal under 35 U.S.C. § 134 from an Examiner's final rejection of claims 1-6, all of the claims pending in the application. We have jurisdiction under 35 U.S.C. § 6(b). We AFFIRM.

The Examiner finally rejected claims 1-6 under 35 U.S.C. § 102(a) or (e) as anticipated by or, in the alternative, under 35 U.S.C. § 103(a) as obvious over Scott et al.<sup>1,2</sup> Final 2.<sup>3</sup>

The Examiner finally rejected claims 1-6 under 35 U.S.C. § 103(a) as unpatentable over the combination of Tiedt et al.<sup>4</sup> and Scott. Final 2.

#### B. ISSUES

Whether the Appellants have shown that the Examiner reversibly erred in rejecting claims 1-6 under 35 U.S.C. § 102(e) as anticipated by or, in the alternative, under 35 U.S.C. § 103(a) as obvious over Scott.

Whether the Appellants have shown that the Examiner reversibly erred in rejecting claims 1-6 under 35 U.S.C. § 103(a) as unpatentable over the combination of Tiedt and Scott.

#### C. Subject matter on appeal

The subject matter on appeal is directed to a sintered body of gastight polycrystalline aluminum oxide containing magnesium in oxidic form (MgO) and a second metal M in oxidic form (M<sub>2</sub>O<sub>3</sub>). Spec. 1:1-2. The sintered alumina body may be used in a lamp vessel of a high-pressure discharge lamp. Spec. 1:17-19, 4:13-15.

Claim 1 is representative of the subject matter on appeal:

1. A sintered body of gastight polycrystalline aluminum oxide containing magnesium in oxidic form and a second metal

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<sup>1</sup> US 6,639,362 B1 issued to Scott et al. on October 28, 2003 ("Scott").

<sup>2</sup> Although the Appellants have not challenged the status of Scott as prior art under 35 U.S.C. § 102(a), it does not appear that Scott is available as prior art under §102(a) because Scott was patented in this country *after* the December 18, 2002, filing date of the Appellants' PCT/IB02/05618. Nevertheless, Scott is available as prior art under 35 U.S.C. § 102(e).

<sup>3</sup> Final Office Action mailed October 16, 2006.

<sup>4</sup> US 5,625,256 issued to Tiedt et al. on April 29, 1997 ("Tiedt").

M in oxidic form, characterized in that the second metal M is selected from erbium, holmium, dysprosium and thulium, and the aluminum oxide further comprises zirconium in oxidic form, magnesium calculated as MgO being present in a quantity by weight of 50 to 1000 ppm, the second metal calculated as  $M_2O_3$  being present in a quantity by weight of 10 to 100 ppm, and zirconium calculated as  $ZrO_2$  being present in a quantity by weight of 50 to 600 ppm.

#### D. PRINCIPLES OF LAW

A claimed invention is not patentable if the subject matter of the claimed invention would have been obvious to a person having ordinary skill in the art. 35 U.S.C. § 103(a); *KSR Int'l Co. v. Teleflex Inc.*, 127 S. Ct. 1727 (2007); *Graham v. John Deere Co. of Kansas City*, 383 U.S. 1 (1966).

Facts relevant to a determination of obviousness include (1) the scope and content of the prior art, (2) any differences between the claimed invention and the prior art, (3) the level of skill in the art, and (4) any relevant objective evidence of obviousness or non-obviousness. *KSR*, 127 S. Ct. at 1734, *Graham*, 383 U.S. at 17-18.

A person of ordinary skill is also a person of ordinary creativity, not an automaton. *KSR*, 127 S. Ct. at 1742. One of ordinary skill in the art is presumed to have skills apart from what the prior art references expressly disclose. *See In re Sovish*, 769 F.2d 738, 742 (Fed. Cir. 1985).

A rejection premised upon a proper combination of references cannot be overcome by attacking the references individually. *In re Keller*, 642 F.2d 413, 426 (CCPA 1981).

The question under 35 U.S.C. § 103 is not merely what the references teach but what they would have suggested to one of ordinary skill in the art

at the time the invention was made. All disclosures of the prior art must be considered. *In re Lamberti*, 545 F.2d 747, 750 (CCPA 1976).

It is well-settled that where the difference between the claimed invention and the prior art is an overlapping range, the Appellants must show that the particular range is critical by evidence of unexpected results. *In re Wertheim*, 541 F.2d 257, 267 (CCPA 1976); *In re Woodruff*, 919 F.2d 1575, 1578 (Fed. Cir. 1990).

In order for a showing of “unexpected results” to be probative evidence of non-obviousness, it falls upon the applicant to at least establish: (1) that there actually is a difference between the results obtained through the claimed invention and those of the prior art; and (2) that the difference actually obtained would not have been expected by one skilled in the art at the time of invention. *In re Freeman*, 474 F.2d 1318, 1324 (CCPA 1973).

## E. ANALYSIS

### 1. Scott

The Examiner found that Scott discloses a sintered polycrystalline body to be used in high intensity discharge lamps comprising alumina with dopants that include MgO in an amount of 50-1500 ppm, ZrO<sub>2</sub> in an amount of 0-700 ppm, and Dy<sub>2</sub>O<sub>3</sub> in an amount of 0-1000 ppm.<sup>5</sup> The Examiner found that Scott discloses that the sintered alumina body preferably includes at least 100 ppm ZrO<sub>2</sub>. Ans. 3<sup>6</sup>; Scott 4:29-43.

In view of the substantial overlap of the ranges disclosed in Scott and the ranges claimed by the Appellants, the Examiner found that Scott

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<sup>5</sup> At least 5 ppm of Dy<sub>2</sub>O<sub>3</sub> is present in the alumina when Dy<sub>2</sub>O<sub>3</sub> is included as a dopant. Scott 4:29-41.

<sup>6</sup> Examiner’s Answer mailed June 13, 2007.

anticipates the claimed subject matter or, in the alternative, concluded that Scott renders obvious the claimed subject matter. Ans. 3.

The Appellants argue that Scott does not anticipate or render obvious the claimed subject matter for several reasons. First, the Appellants argue that claim 1 limits the amount of MgO to 1000 ppm whereas Scott discloses that the amount of MgO may be as high as 1500 ppm. The Appellants also argue that claim 1 requires ZrO<sub>2</sub> whereas Scott discloses that ZrO<sub>2</sub> is optional. App. Br. 5-6.<sup>7</sup>

Scott discloses that the alumina comprises 50-1500 ppm of MgO. Scott 4:29-41. Scott discloses that alumina powder may be doped with magnesia (MgO) in an amount preferably equal to 0.05% by weight of the alumina, i.e., 500 ppm, to inhibit grain growth. Scott 4:12-14. Scott also discloses that the alumina includes 0-700 ppm of ZrO<sub>2</sub> and *preferably* includes at least 100 ppm ZrO<sub>2</sub>. Scott 4:42-43.

We find that these teachings in Scott would lead one of ordinary skill in the art toward the claimed amounts of MgO and ZrO<sub>2</sub> with sufficient specificity to anticipate the claimed subject matter. *Contra Atofina v. Great Lakes Chemical Corp.*, 441 F.3d 991, 999 (Fed. Cir. 2006) (given the considerable difference between the claimed temperature range and the range in the prior art, no reasonable fact finder could conclude that the prior art describes the claimed range with sufficient specificity to anticipate this claim limitation). That being said, the §103 rejection is dispositive.

The Appellants do not point to any error in the Examiner's findings that the ranges of MgO and ZrO<sub>2</sub> disclosed in Scott and claimed by the Appellants substantially overlap. Thus, the Appellants must show that the

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<sup>7</sup> Appeal Brief dated March 5, 2007.

claimed ranges are critical by evidence of unexpected results. *Wertheim*, 541 F.2d at 267; *Woodruff*, 919 F.2d at 1578.

Referring to page 2, lines 28-30 of the Specification, the Appellants argue that the claimed upper limit of MgO (1000 ppm) is critical since undesirable spinel formation occurs above 1000 ppm. App. Br. 6. Referring to page 2, lines 7-13 of the Specification, the Appellants also argue that the amount of ZrO<sub>2</sub> is critical because too much ZrO<sub>2</sub> adversely affects light efficiency and the mechanical strength of the lamp vessel. App. Br. 8.

The portions of the Specification relied on by the Appellants do not associate any amounts of MgO and ZrO<sub>2</sub> with these effects. Moreover, the Appellants have failed to direct us to any credible evidence establishing that the effects of MgO and ZrO<sub>2</sub> disclosed in the Specification would have been unexpected. *Freeman*, 474 F.2d at 1324; *Rohm and Haas Co. v. Brotech Corp.*, 127 F.3d 1089, 1092 (Fed. Cir. 1997) (nothing in the rules or in jurisprudence requires the fact finder to credit unsupported or conclusory assertions). Thus, the Appellants have failed to establish that the claimed amounts of MgO and ZrO<sub>2</sub> exhibit unexpected results.

The Appellants also argue that Scott does not anticipate or render obvious the claimed subject matter because Scott does not disclose that the second metal M may include erbium, holmium, and thulium. App. Br. 5-6.

Claim 1 recites the following Markush group, “the second metal M is selected from erbium [Er], holmium [Ho], dysprosium [Dy] and thulium [Tm<sup>8</sup>].” A Markush group is a type of genus where the recited species belong to a recognized class or have a common characteristic. *See In re Harnisch*, 631 F.2d 716, 719-20 (CCPA 1980) (“‘Markush’ was the name of

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<sup>8</sup> The Appellants incorrectly identify thulium as “Tl.” *See, e.g.*, App. Br. 5-6.

an applicant for patent . . . who happened to use in a claim a type of definition of a genus or subgenus by enumeration of species . . . .”); *In re Ziegler*, 347 F.2d 642, 650 (CCPA 1965) (referring to “species-Markush genus”). Scott discloses a species with the claimed Markush group, i.e., dysprosium. It is well settled that a single prior art species within a claimed genus anticipates the genus. *Atlas Powder Co. v. IRECO Inc.*, 190 F.3d 1342, 1346 (Fed. Cir. 1999). Thus, Scott anticipates the recited Markush group.

The Appellants have not shown that the Examiner reversibly erred in rejecting claim 1 under 35 U.S.C. § 102(e) as anticipated by or, in the alternative, under 35 U.S.C. § 103(a) as obvious over Scott.

The Appellants do not argue the patentability of dependent claims 2-6 separately. Therefore, the Appellants have likewise failed to show that the Examiner reversibly erred in rejecting claims 2-6 under 35 U.S.C. § 102(e) as anticipated by or, in the alternative, under 35 U.S.C. § 103(a) as obvious over Scott.

## 2. Tiedt and Scott

The Examiner found that Tiedt discloses a sintered polycrystalline alumina body for use in high intensity discharge lamps similar to the lamps of the Appellants and Scott. The Examiner found that Tiedt discloses that the alumina material includes dopants MgO in an amount of 100-800 ppm, ZrO<sub>2</sub> in an amount of 200-1200 ppm, and Y<sub>2</sub>O<sub>3</sub> in an amount of 10-300 ppm. The Examiner found that Tiedt limits the amount of MgO to 800 ppm to prevent the formation of secondary phases and uses ZrO<sub>2</sub> in amounts greater than 200 ppm to improve resistance but limits the amount of ZrO<sub>2</sub> to 800 ppm to prevent undesired grain growth. Tiedt 3:66-4:17. The Examiner



found that Tiedt does not teach that  $\text{Dy}_2\text{O}_3$  may be used as a dopant. Ans. 3-4.

The Examiner found that Scott teaches a polycrystalline alumina body wherein  $\text{Dy}_2\text{O}_3$  and  $\text{Y}_2\text{O}_3$  may be substituted for one another. Scott 4:29-47. The Examiner concluded that it would have been obvious to one of ordinary skill in the art to substitute  $\text{Dy}_2\text{O}_3$  for  $\text{Y}_2\text{O}_3$  in the sintered polycrystalline alumina body of Tiedt since Scott teaches that  $\text{Dy}_2\text{O}_3$  and  $\text{Y}_2\text{O}_3$  are equivalents. Ans. 4.

The Appellants argue that the teachings of Tiedt and Scott are in conflict, and one of ordinary skill in the art would not combine them in the manner suggested by the Examiner. Specifically, the Appellants argue that Tiedt discloses that the upper limit for MgO is 800 ppm whereas Scott discloses that the upper limit for MgO is 1500 ppm, and Tiedt requires  $\text{ZrO}_2$  but Scott teaches that  $\text{ZrO}_2$  is optional. App. Br. 9-10.

We disagree with the Appellants that the teachings of Tiedt and Scott are in conflict with one another. Tiedt and Scott both disclose alumina bodies for use in high-pressure sodium lamps comprising several common dopants, i.e., MgO,  $\text{ZrO}_2$ , and  $\text{Y}_2\text{O}_3$ , in amounts that overlap. Scott 3:5-8, 4:29-41; Tiedt 1:31-36, 2:30-43.

The Examiner relied on Scott to establish that one of ordinary skill in the art would have known that  $\text{Y}_2\text{O}_3$  and  $\text{Dy}_2\text{O}_3$  are equivalent dopants in the disclosed alumina bodies. *See In re Fout*, 675 F.2d 297, 301 (CCPA 1982) (“Express suggestion to substitute one equivalent for another need not be present to render such substitution obvious.”). The Appellants have not pointed to any error in this finding. Rather, the Appellants argue that neither

Tiedt nor Scott disclose the remaining metals in the Markush group, i.e., erbium, holmium, and thulium. App. Br. 10.

It is immaterial that Tiedt and Scott do not disclose all of the metals recited in the claimed Markush group. As explained above, Scott discloses a single prior art species, i.e., dysprosium, within the claimed genus, and thus, anticipates the entire genus. *Atlas Powder*, 190 F.3d at 1346.

The Appellants have not shown that the Examiner reversibly erred in rejecting claim 1 under 35 U.S.C. § 103(a) as unpatentable over the combination of Tiedt and Scott.

The Appellants do not argue the patentability of dependent claims 2-6 separately. Therefore, the Appellants have likewise failed to show that the Examiner reversibly erred in rejecting claims 2-6 under 35 U.S.C. § 103(a) as unpatentable over the combination of Tiedt and Scott.

#### F. DECISION

The rejection of claims 1-6 under 35 U.S.C. § 102(e) as anticipated by or, in the alternative, under 35 U.S.C. § 103(a) as obvious over Scott is affirmed.

The rejection of claims 1-6 under 35 U.S.C. § 103(a) as unpatentable over the combination of Tiedt and Scott is affirmed.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a) (2008).

AFFIRMED

Appeal 2008-1608  
Application 10/500,502

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